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We claim:

- 1 1. An explosives-based system for deslagging a hot online heat-exchange device (31),
 2 comprising:
 3 an explosive device (101);
 4 at least one cooling apparatus (104) cooling said explosive device (101) by gas,
 5 insulating or casing cooling means, particularly while said explosive device (101) is at any
 6 desired location within said hot online heat exchange device (31), thereby preventing heat from
 7 said hot online heat exchange device (31) from detonating said explosive device (101) prior to a
 8 time when it is desired to detonate at will said explosive device (101);
 9 a cooling apparatus and explosive positioning system (12, 106, 112) with said at least one
 10 cooling apparatus (104) and said explosive device (101) cooled thereby affixed thereto (12, 106,
 11 112), enabling a force applied to said cooling apparatus and explosive positioning system (12, 106,
 12 112) to freely move said at least one cooling apparatus (104) and said explosive device (101)
 13 cooled thereby to said any desired location within said hot online heat exchange device (31) and
 14 particularly into a proper position for deslagging, while cooling said explosive device (101); and
 15 detonating means for detonating at will said explosive device (101).
- 1 2. The system of claim 1, said at least one cooling apparatus comprising:
 2 a coolant-delivery apparatus (12, 106) delivering a gas coolant to said explosive device, said
 3 coolant so-cooling said explosive device (101).
- 1 3. The system of claim 2, said gas coolant comprising air.
- 1 4. The system of claim 2, said coolant-delivery apparatus comprising a semipermeable (105)
 2 cooling envelope, thereby enabling said gas coolant to flow continuously into, through, and out of
 3 said cooling envelope (104) and so-cool said explosive device (101).
- 1 5. The system of claim 2, said coolant-delivery apparatus comprising a cooling envelope (104)
 2 further comprising a release valve (130), thereby enabling said gas coolant to flow continuously
 3 into, through, and out of said cooling envelope (104) and so-cool said explosive device (101).
- 1 ²⁰6. The system of claim 1, said at least one cooling apparatus comprising at least one cooling
 2 envelope in turn comprising an insulating one of said cooling envelopes (104) comprising:
 3 an outer insulating layer (502) comprising at least one layer of at least one heat insulating
 4 material insulating said explosive device (101) from said heat from said hot online heat exchange
 5 device (31), and thereby preventing from overheating, and so-cooling, said explosive device (101).
- 1 ²¹7. The system of claim ²⁰6, said insulating one of said cooling envelopes (104) further comprising:
 2 an inner insulating layer (504) comprising at least one heat-reflective material further

3 insulating said explosive device (101) from said heat from said hot online heat exchange device
 4 (31), and thereby further preventing from overheating, and so-cooling, said explosive device (101),
 5 by reflecting any heat penetrating said outer insulating layer (502) away from said explosive
 6 device (101).

1 ²²8. The system of claim ²¹7, further comprising:

2 non-flammable bulk fiber insulation (506) within said insulating one of said cooling
 3 envelopes (104), further insulating said explosive device (101) from said heat from said hot online
 4 heat exchange device (31), and thereby further preventing from overheating, and so-cooling, said
 5 explosive device (101).

1 ²³9. The system of claim ²¹7, further comprising:

2 non-flammable bulk fiber insulation (506) within said insulating one of said cooling
 3 envelopes (104) further insulating said explosive device (101) from said heat from said hot online
 4 heat exchange device (31), and thereby further preventing from overheating, and so-cooling, said
 5 explosive device (101).

1 ²⁰10. The system of claim ²¹6, said at least one layer of said at least one heat insulating material
 2 selected from the heat insulator group consisting of:

3 treated and untreated: silica cloth; aluminized silica cloth; silicone coated silica cloth;
 4 fiberglass cloth; silicone impregnated fiberglass fabric; vermiculite coated fiberglass; neoprene
 5 coated fiberglass; ceramic cloth; and knitted silica glass.

1 ²²11. The system of claim ²¹7, said at least one heat-reflective material selected from the heat-
 2 reflective material group consisting of:

3 treated and untreated: aluminized cloth; silica cloth; fiberglass cloth; ceramic cloth; and
 4 stainless steel cloth.

1 ²³12. The system of claim ²²8, said non-flammable bulk fiber insulation (506) comprising at least one
 2 heat insulating material selected from the heat insulator group consisting of:

3 treated and untreated: amorphous silica fiber; silica cloth; aluminized silica cloth;
 4 silicone coated silica cloth; fiberglass cloth; silicone impregnated fiberglass fabric; vermiculite
 5 coated fiberglass; neoprene coated fiberglass; ceramic cloth; and knitted silica glass.

1 ³¹13. The system of claim 1, said at least one cooling apparatus comprising at least one cooling
 2 envelope in turn comprising a casing one of said cooling envelopes, said explosive device (101)
 3 further comprising:

4 a heat-resistant explosive casing (602) comprising said casing one of said cooling
 5 envelopes (104), and further comprising a detonator well (604) sufficiently removed from an

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6 outside surface of said explosive device (101) and said explosive casing (602) to provide
 7 suitable heat insulation to a detonator cap (102) placed within said detonator well (604); and
 8 explosive material (606) encased within, and thereby insulated and prevented from
 9 overheating by said heat-resistant explosive casing (602).

1 ³²14. The system of claim ³¹13, further comprising a non-heat-resistant explosive casing (608)
 2 encasing said explosive material (606), wherein said non-heat-resistant explosive casing (608) and
 3 said explosive material (606) therein is encased within said heat-resistant explosive casing (602).

1 ³³15. The system of claim ³¹13, said heat-resistant explosive casing (602) comprising at least one
 2 layer of at least one heat insulating material selected from the heat insulator group consisting of:
 3 treated and untreated: silica cloth; aluminized silica cloth; silicone coated silica cloth;
 4 fiberglass cloth; silicone impregnated fiberglass fabric; vermiculite coated fiberglass; neoprene
 5 coated fiberglass; ceramic cloth; and knitted silica glass.

1 ³⁴16. The system of claim 2, said at least one cooling apparatus further comprising at least one
 2 cooling envelope further comprising an insulating one of said cooling envelopes (104), said
 3 insulating one of said cooling envelopes (104) comprising:
 4 an outer insulating layer (502) comprising at least one layer of at least one heat insulating
 5 material insulating said explosive device (101) from said heat from said hot online heat exchange
 6 device (31), and thereby preventing from overheating, and so-cooling, said explosive device (101).

1 ³⁵17. The system of claim ³⁴16, said insulating one of said cooling envelopes (104) further comprising:
 2 an inner insulating layer (504) comprising at least one heat-reflective material further
 3 insulating said explosive device (101) from said heat from said hot online heat exchange device
 4 (31), and thereby further preventing from overheating, and so-cooling, said explosive device (101),
 5 by reflecting any heat penetrating said outer insulating layer (502) away from said explosive
 6 device (101).

1 ³⁶18. The system of claim ³⁵17, further comprising:
 2 non-flammable bulk fiber insulation (506) within said insulating one of said cooling
 3 envelopes (104) further insulating said explosive device (101) from said heat from said hot online
 4 heat exchange device (31), and thereby further preventing from overheating, and so-cooling, said
 5 explosive device (101).

1 ³⁷19. The system of claim ³⁶18, further comprising:
 2 non-flammable bulk fiber insulation (506) within said insulating one of said cooling
 3 envelopes (104) further insulating said explosive device (101) from said heat from said hot online
 4 heat exchange device (31), and thereby further preventing from overheating, and so-cooling, said

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5 explosive device (101).

1 ¹⁴20. The system of claim 2, said at least one cooling apparatus further comprising at least one
2 cooling envelope in turn comprising a casing one of said cooling envelopes, said explosive device
3 (101) further comprising:

4 a heat-resistant explosive casing (602) comprising said casing one of said cooling
5 envelopes (104), and further comprising a detonator well (604) sufficiently removed from an
6 outside surface of said explosive device (101) and said explosive casing (602) to provide
7 suitable heat insulation to a detonator cap (102) placed within said detonator well (604); and
8 explosive material (606) encased within, and thereby insulated and prevented from
9 overheating by said heat-resistant explosive casing (602).

1 ³⁰21. The system of claim ²⁰6, said at least one cooling envelope comprising a casing one of said
2 cooling envelopes, said explosive device (101) further comprising:

3 a heat-resistant explosive casing (602) comprising said casing one of said cooling
4 envelopes (104), and further comprising a detonator well (604) sufficiently removed from an
5 outside surface of said explosive device (101) and said explosive casing (602) to provide
6 suitable heat insulation to a detonator cap (102) placed within said detonator well (604); and
7 explosive material (606) encased within, and thereby insulated and prevented from
8 overheating by said heat-resistant explosive casing (602).

1 ²⁸22. The system of claim ²¹7, said at least one cooling envelope comprising a casing one of said
2 cooling envelopes, said explosive device (101) further comprising:

3 a heat-resistant explosive casing (602) comprising said casing one of said cooling
4 envelopes (104), and further comprising a detonator well (604) sufficiently removed from an
5 outside surface of said explosive device (101) and said explosive casing (602) to provide
6 suitable heat insulation to a detonator cap (102) placed within said detonator well (604); and
7 explosive material (606) encased within, and thereby insulated and prevented from
8 overheating by said heat-resistant explosive casing (602).

1 ²⁴23. The system of claim ²²8, said at least one cooling envelope comprising a casing one of said
2 cooling envelopes, said explosive device (101) further comprising:

3 a heat-resistant explosive casing (602) comprising said casing one of said cooling
4 envelopes (104), and further comprising a detonator well (604) sufficiently removed from an
5 outside surface of said explosive device (101) and said explosive casing (602) to provide
6 suitable heat insulation to a detonator cap (102) placed within said detonator well (604); and
7 explosive material (606) encased within, and thereby insulated and prevented from

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8 overheating by said heat-resistant explosive casing (602).

1 ²⁴24. The system of claim ²⁵9, said at least one cooling envelope comprising a casing one of said
2 cooling envelopes, said explosive device (101) further comprising:

3 a heat-resistant explosive casing (602) comprising said casing one of said cooling
4 envelopes (104), and further comprising a detonator well (604) sufficiently removed from an
5 outside surface of said explosive device (101) and said explosive casing (602) to provide
6 suitable heat insulation to a detonator cap (102) placed within said detonator well (604); and
7 explosive material (606) encased within, and thereby insulated and prevented from
8 overheating by said heat-resistant explosive casing (602).

1 ²⁵25. The system of claim ²⁶16, said at least one cooling envelope comprising a casing one of said
2 cooling envelopes, said explosive device (101) further comprising:

3 a heat-resistant explosive casing (602) comprising said casing one of said cooling
4 envelopes (104), and further comprising a detonator well (604) sufficiently removed from an
5 outside surface of said explosive device (101) and said explosive casing (602) to provide
6 suitable heat insulation to a detonator cap (102) placed within said detonator well (604); and
7 explosive material (606) encased within, and thereby insulated and prevented from
8 overheating by said heat-resistant explosive casing (602).

1 ²⁶26. The system of claim ²⁷17, said at least one cooling envelope comprising a casing one of said
2 cooling envelopes, said explosive device (101) further comprising:

3 a heat-resistant explosive casing (602) comprising said casing one of said cooling
4 envelopes (104), and further comprising a detonator well (604) sufficiently removed from an
5 outside surface of said explosive device (101) and said explosive casing (602) to provide
6 suitable heat insulation to a detonator cap (102) placed within said detonator well (604); and
7 explosive material (606) encased within, and thereby insulated and prevented from
8 overheating by said heat-resistant explosive casing (602).

1 ²⁷27. The system of claim ²⁸18, said at least one cooling envelope comprising a casing one of said
2 cooling envelopes, said explosive device (101) further comprising:

3 a heat-resistant explosive casing (602) comprising said casing one of said cooling
4 envelopes (104), and further comprising a detonator well (604) sufficiently removed from an
5 outside surface of said explosive device (101) and said explosive casing (602) to provide
6 suitable heat insulation to a detonator cap (102) placed within said detonator well (604); and
7 explosive material (606) encased within, and thereby insulated and prevented from
8 overheating by said heat-resistant explosive casing (602).

1 28. The system of claim 19, said at least one cooling envelope comprising a casing one of said
2 cooling envelopes, said explosive device (101) further comprising:

3 a heat-resistant explosive casing (602) comprising said casing one of said cooling
4 envelopes (104), and further comprising a detonator well (604) sufficiently removed from an
5 outside surface of said explosive device (101) and said explosive casing (602) to provide
6 suitable heat insulation to a detonator cap (102) placed within said detonator well (604); and
7 explosive material (606) encased within, and thereby insulated and prevented from
8 overheating by said heat-resistant explosive casing (602).

1 29. A heat-resistant explosive device (101) to facilitate controlled explosive detonation in a hot
2 surrounding environment, comprising:

3 a heat-resistant explosive casing (602) comprising a casing one of said cooling envelopes
4 (104), and further comprising a detonator well (604) sufficiently removed from an outside
5 surface of said explosive device (101) and said explosive casing (602) to provide suitable heat
6 insulation to a detonator cap (102) placed within said detonator well (604); and
7 explosive material (606) encased within, and thereby insulated and prevented from
8 overheating by said heat-resistant explosive casing (602).

1 30. The heat-resistant explosive device (101) of claim 29, said heat-resistant explosive casing
2 (602) comprising at least one layer of at least one heat insulating material selected from the heat
3 insulator group consisting of:

4 treated and untreated silica cloth; aluminized silica cloth; silicone coated silica cloth;
5 fiberglass cloth; silicone impregnated fiberglass fabric; vermiculite coated fiberglass; neoprene
6 coated fiberglass; ceramic cloth; and knitted silica glass.

1 31. The heat-resistant explosive device (101) of claim 29, further comprising a non-heat-resistant
2 explosive casing (608) encasing said explosive material (606), wherein said non-heat-resistant
3 explosive casing (608) and said explosive material (606) therein is encased within said heat-
4 resistant explosive casing (602).

1 32. A method for deslagging a hot, online heat-exchange device (31), comprising the steps of:

2 cooling an explosive device (101) by gas, insulating or casing cooling means,
3 particularly while said explosive device (101) is at any desired location within said hot online
4 heat exchange device (31), thereby preventing heat from said hot online heat exchange device
5 (31) from detonating said explosive device (101) prior to a time when it is desired to detonate at
6 will said explosive device (101);

7 affixing said at least one cooling apparatus (104) and said explosive device (101) cooled

8 thereby to a cooling apparatus and explosive positioning system (12, 106, 112);
 9 applying a force to said cooling apparatus and explosive positioning system (12, 106, 112)
 10 and thereby freely moving said at least one cooling apparatus (104) and said explosive device (101)
 11 cooled thereby to said any desired location within said hot online heat exchange device (31) and
 12 particularly into a proper position for deslagging, while cooling said explosive device (101); and
 13 detonating at will said explosive device (101).

1 ⁴⁰~~33~~. The method of claim ³⁹~~32~~, further comprising the step of:

2 delivering a gas coolant to said explosive device, said coolant so-cooling said explosive
 3 device (101), using a coolant-delivery apparatus (12, 106).

1 ⁴⁰~~34~~. The method of claim ⁴⁰~~33~~, said gas coolant comprising air.

1 ⁴¹~~35~~. The method of claim ⁴⁰~~33~~, said coolant-delivery apparatus comprising a semipermeable cooling
 2 envelope, further comprising the step of:

3 flowing said gas coolant continuously into, through, and out of said cooling envelope (104)
 4 and so-cooling said explosive device (101).

1 ⁴²~~36~~. The method of claim ⁴⁰~~33~~, said coolant-delivery apparatus comprising a cooling envelope,
 2 further comprising the step of:

3 flowing said gas coolant continuously into, through, and out of said cooling envelope (104)
 4 and so-cooling said explosive device (101), using a release valve (130) of said cooling envelope
 5 (104).

1 ⁴³~~37~~. The method of claim ³⁹~~32~~, said at least one cooling apparatus comprising at least one cooling
 2 envelope in turn comprising an insulating one of said cooling envelopes, further comprising the
 3 step of:

4 insulating said explosive device (101) from said heat from said hot online heat exchange
 5 device (31), and thereby preventing from overheating, and so-cooling, said explosive device (101),
 6 using an outer insulating layer (502) of said insulating one of said cooling envelopes (104)
 7 comprising at least one layer of at least one heat insulating material.

1 ⁵⁰~~38~~. The method of claim ⁴⁴~~37~~, further comprising the step of:

2 further insulating said explosive device (101) from said heat from said hot online heat
 3 exchange device (31), and thereby further preventing from overheating, and so-cooling, said
 4 explosive device (101), by reflecting any heat penetrating said outer insulating layer (502) away
 5 from said explosive device (101), using an inner insulating layer (504) of said insulating one of
 6 said cooling envelopes (104) comprising at least one heat-reflective material.

1 ⁵⁵~~39~~. The method of claim ⁴⁴~~37~~, further comprising the step of:

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2 further insulating said explosive device (101) from said heat from said hot online heat
 3 exchange device (31), and thereby further preventing from overheating, and so-cooling, said
 4 explosive device (101), using non-flammable bulk fiber insulation (506) within said insulating
 5 one of said cooling envelopes (104) .

1 ⁵¹40. The method of claim ⁵⁰38, further comprising the step of:

2 further insulating said explosive device (101) from said heat from said hot online heat
 3 exchange device (31), and thereby further preventing from overheating, and so-cooling, said
 4 explosive device (101), using non-flammable bulk fiber insulation (506) within said insulating
 5 one of said cooling envelopes (104) .

1 ⁵²41. The method of claim ⁵⁰37, further comprising the step of selecting said at least one layer of said
 2 at least one heat insulating material from the heat insulator group consisting of:

3 treated and untreated: silica cloth; aluminized silica cloth; silicone coated silica cloth;
 4 fiberglass cloth; silicone impregnated fiberglass fabric; vermiculite coated fiberglass; neoprene
 5 coated fiberglass; ceramic cloth; and knitted silica glass.

1 ⁵³42. The method of claim ⁵⁰38, further comprising the step of selecting said at least one heat-
 2 reflective material from the heat-reflective material group consisting of:

3 treated and untreated: aluminized cloth; silica cloth; fiberglass cloth; ceramic cloth; and
 4 stainless steel cloth.

1 ⁵⁴43. The method of claim ⁵⁵39, said non-flammable bulk fiber insulation (506) comprising at least
 2 one heat insulating material, further comprising the step of selecting said at least one heat insulating
 3 material from the heat insulator group consisting of:

4 treated and untreated: amorphous silica fiber; silica cloth; aluminized silica cloth;
 5 silicone coated silica cloth; fiberglass cloth; silicone impregnated fiberglass fabric; vermiculite
 6 coated fiberglass; neoprene coated fiberglass; ceramic cloth; and knitted silica glass.

1 ⁵⁶44. The method of claim ³⁹32, said at least one cooling apparatus comprising at least one cooling
 2 envelope in turn comprising a casing one of said cooling envelopes, comprising the further steps of
 3 providing said explosive device (101) by:

4 encasing an explosive material (606) within a heat-resistant explosive casing (602)
 5 comprising said casing one of said cooling envelopes (104), and thereby insulating and
 6 preventing from overheating, said explosive material (606); and

7 placing a detonator cap (102) within a detonator well (604) of said heat-resistant
 8 explosive casing (602), said detonator well (604) sufficiently removed from an outside surface
 9 of said explosive device (101) and said explosive casing (602), thereby suitably insulating and

10 preventing from overheating, said detonator cap (102).

1 45. The method of claim 44, comprising the further steps of:

2 encasing said explosive material (606) in a non-heat-resistant explosive casing (608); and
3 encasing said non-heat-resistant explosive casing (608) and said explosive material (606) therein
4 within said heat-resistant explosive casing (602).

1 46. The method of claim 44, comprising the further step of selecting at least one layer of at least
2 one heat insulating material of said heat-resistant explosive casing (602) from the heat insulator
3 group consisting of:

4 treated and untreated: silica cloth; aluminized silica cloth; silicone coated silica cloth;
5 fiberglass cloth; silicone impregnated fiberglass fabric; vermiculite coated fiberglass; neoprene
6 coated fiberglass; ceramic cloth; and knitted silica glass.

1 47. The method of claim 33, said at least one cooling apparatus further comprising at least one
2 cooling envelope in turn comprising an insulating one of said cooling envelopes, further comprising
3 the step of:

4 insulating said explosive device (101) from said heat from said hot online heat exchange
5 device (31), and thereby preventing from overheating, and so-cooling, said explosive device (101),
6 using an outer insulating layer (502) of said insulating one of said cooling envelopes (104)
7 comprising at least one layer of at least one heat insulating material.

1 48. The method of claim 47, further comprising the step of:

2 further insulating said explosive device (101) from said heat from said hot online heat
3 exchange device (31), and thereby further preventing from overheating, and so-cooling, said
4 explosive device (101), by reflecting any heat penetrating said outer insulating layer (502) away
5 from said explosive device (101), using an inner insulating layer (504) of said insulating one of
6 said cooling envelopes (104) comprising at least one heat-reflective material.

1 49. The method of claim 47, further comprising the step of:

2 further insulating said explosive device (101) from said heat from said hot online heat
3 exchange device (31), and thereby further preventing from overheating, and so-cooling, said
4 explosive device (101), using non-flammable bulk fiber insulation (506) within said insulating
5 one of said cooling envelopes (104).

1 50. The method of claim 48, further comprising the step of:

2 further insulating said explosive device (101) from said heat from said hot online heat
3 exchange device (31), and thereby further preventing from overheating, and so-cooling, said
4 explosive device (101), using non-flammable bulk fiber insulation (506) within said insulating

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5 one of said cooling envelopes (104).

1 ⁷¹51. The method of claim ³⁰33, said at least one cooling apparatus further comprising at least one
2 cooling envelope in turn comprising a casing one of said cooling envelopes, comprising the further
3 steps of providing said explosive device (101) by:

4 encasing an explosive material (606) within a heat-resistant explosive casing (602)
5 comprising said casing one of said cooling envelopes (104), and thereby insulating and
6 preventing from overheating, said explosive material (606); and

7 placing a detonator cap (102) within a detonator well (604) of said heat-resistant
8 explosive casing (602), said detonator well (604) sufficiently removed from an outside surface
9 of said explosive device (101) and said explosive casing (602), thereby suitably insulating and
10 preventing from overheating, said detonator cap (102).

1 ⁵¹52. The method of claim ³⁷37, said at least one cooling apparatus further comprising at least one
2 cooling envelope in turn comprising a casing one of said cooling envelopes, comprising the further
3 steps of providing said explosive device (101) by:

4 encasing an explosive material (606) within a heat-resistant explosive casing (602)
5 comprising said casing one of said cooling envelopes (104), and thereby insulating and
6 preventing from overheating, said explosive material (606); and

7 placing a detonator cap (102) within a detonator well (604) of said heat-resistant
8 explosive casing (602), said detonator well (604) sufficiently removed from an outside surface
9 of said explosive device (101) and said explosive casing (602), thereby suitably insulating and
10 preventing from overheating, said detonator cap (102).

1 ⁵⁴53. The method of claim ³⁸38, said at least one cooling apparatus further comprising at least one
2 cooling envelope in turn comprising a casing one of said cooling envelopes, comprising the further
3 steps of providing said explosive device (101) by:

4 encasing an explosive material (606) within a heat-resistant explosive casing (602)
5 comprising said casing one of said cooling envelopes (104), and thereby insulating and
6 preventing from overheating, said explosive material (606); and

7 placing a detonator cap (102) within a detonator well (604) of said heat-resistant
8 explosive casing (602), said detonator well (604) sufficiently removed from an outside surface
9 of said explosive device (101) and said explosive casing (602), thereby suitably insulating and
10 preventing from overheating, said detonator cap (102).

1 ⁵⁷54. The method of claim ³⁹39, said at least one cooling apparatus further comprising at least one
2 cooling envelope in turn comprising a casing one of said cooling envelopes, comprising the further

3 steps of providing said explosive device (101) by:

4 encasing an explosive material (606) within a heat-resistant explosive casing (602)

5 comprising said casing one of said cooling envelopes (104), and thereby insulating and

6 preventing from overheating, said explosive material (606); and

7 placing a detonator cap (102) within a detonator well (604) of said heat-resistant

8 explosive casing (602), said detonator well (604) sufficiently removed from an outside surface

9 of said explosive device (101) and said explosive casing (602), thereby suitably insulating and

10 preventing from overheating, said detonator cap (102).

1 ⁵²55. The method of claim ⁵¹40, said at least one cooling apparatus further comprising at least one

2 cooling envelope in turn comprising a casing one of said cooling envelopes, comprising the further

3 steps of providing said explosive device (101) by:

4 encasing an explosive material (606) within a heat-resistant explosive casing (602)

5 comprising said casing one of said cooling envelopes (104), and thereby insulating and

6 preventing from overheating, said explosive material (606); and

7 placing a detonator cap (102) within a detonator well (604) of said heat-resistant

8 explosive casing (602), said detonator well (604) sufficiently removed from an outside surface

9 of said explosive device (101) and said explosive casing (602), thereby suitably insulating and

10 preventing from overheating, said detonator cap (102).

1 ⁷⁰56. The method of claim ⁶³47, said at least one cooling apparatus further comprising at least one

2 cooling envelope in turn comprising a casing one of said cooling envelopes, comprising the further

3 steps of providing said explosive device (101) by:

4 encasing an explosive material (606) within a heat-resistant explosive casing (602)

5 comprising said casing one of said cooling envelopes (104), and thereby insulating and

6 preventing from overheating, said explosive material (606); and

7 placing a detonator cap (102) within a detonator well (604) of said heat-resistant

8 explosive casing (602), said detonator well (604) sufficiently removed from an outside surface

9 of said explosive device (101) and said explosive casing (602), thereby suitably insulating and

10 preventing from overheating, said detonator cap (102).

1 ⁶⁷57. The method of claim ⁶⁴48, said at least one cooling apparatus further comprising at least one

2 cooling envelope in turn comprising a casing one of said cooling envelopes, comprising the further

3 steps of providing said explosive device (101) by:

4 encasing an explosive material (606) within a heat-resistant explosive casing (602)

5 comprising said casing one of said cooling envelopes (104), and thereby insulating and

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6 preventing from overheating, said explosive material (606); and
7 placing a detonator cap (102) within a detonator well (604) of said heat-resistant
8 explosive casing (602), said detonator well (604) sufficiently removed from an outside surface
9 of said explosive device (101) and said explosive casing (602), thereby suitably insulating and
10 preventing from overheating, said detonator cap (102).

1 58. The method of claim ⁴⁹49, said at least one cooling apparatus further comprising at least one
2 cooling envelope in turn comprising a casing one of said cooling envelopes, comprising the further
3 steps of providing said explosive device (101) by:

4 encasing an explosive material (606) within a heat-resistant explosive casing (602)
5 comprising said casing one of said cooling envelopes (104), and thereby insulating and
6 preventing from overheating, said explosive material (606); and
7 placing a detonator cap (102) within a detonator well (604) of said heat-resistant
8 explosive casing (602), said detonator well (604) sufficiently removed from an outside surface
9 of said explosive device (101) and said explosive casing (602), thereby suitably insulating and
10 preventing from overheating, said detonator cap (102).

1 59. The method of claim ⁵⁰50, said at least one cooling apparatus further comprising at least one
2 cooling envelope in turn comprising a casing one of said cooling envelopes, comprising the further
3 steps of providing said explosive device (101) by:

4 encasing an explosive material (606) within a heat-resistant explosive casing (602)
5 comprising said casing one of said cooling envelopes (104), and thereby insulating and
6 preventing from overheating, said explosive material (606); and
7 placing a detonator cap (102) within a detonator well (604) of said heat-resistant
8 explosive casing (602), said detonator well (604) sufficiently removed from an outside surface
9 of said explosive device (101) and said explosive casing (602), thereby suitably insulating and
10 preventing from overheating, said detonator cap (102).

1 60. A method for facilitating controlled explosive detonation in a hot surrounding environment,
2 comprising the steps of providing a heat-resistant explosive device (101) for said controlled
3 explosive detonation by:

4 encasing an explosive material (606) within a heat-resistant explosive casing (602)
5 comprising a casing cooling envelope (104), and thereby insulating and preventing from
6 overheating, said explosive material (606); and

7 placing a detonator cap (102) within a detonator well (604) of said heat-resistant
8 explosive casing (602), said detonator well (604) sufficiently removed from an outside surface

9 of said explosive device (101) and said explosive casing (602), thereby suitably insulating and
 10 preventing from overheating, said detonator cap (102).

1 61. The method of claim 60, comprising the further steps of:

2 encasing said explosive material (606) in a non-heat-resistant explosive casing (608); and

3 encasing said non-heat-resistant explosive casing (608) and said explosive material (606)
 4 therein within said heat-resistant explosive casing (602).

1 62. The method of claim 61, comprising the further step of selecting at least one layer of at least
 2 one heat insulating material of said heat-resistant explosive casing (602) from the heat insulator
 3 group consisting of:

4 treated and untreated: silica cloth; aluminized silica cloth; silicone coated silica cloth;
 5 fiberglass cloth; silicone impregnated fiberglass fabric; vermiculite coated fiberglass; neoprene
 6 coated fiberglass; ceramic cloth; and knitted silica glass.

1 ³⁴63. The system of claim 1, wherein said explosive device is substantially fixed relative to said
 2 cooling apparatus.

1 ¹⁵64. The system of claim 2, wherein said explosive device is substantially fixed relative to said
 2 cooling apparatus.

1 ³⁵65. The system of claim 1, wherein said any desired location within said hot online heat
 2 exchange device comprises a furnace region of said hot online heat exchange device.

1 ³⁶66. The system of claim 1, wherein said any desired location within said hot online heat
 2 exchange device comprises a region other than a furnace region of said hot online heat exchange
 3 device.

1 ⁵⁷67. The system of claim 1, wherein said any desired location within said hot online heat
 2 exchange device is proximate the heat of a furnace of said hot online heat exchange device.

1 ⁵⁸68. The system of claim 1, wherein said any desired location within said hot online heat
 2 exchange device is not proximate the heat of a furnace of said hot online heat exchange device.

1 ¹⁶69. The system of claim 2, wherein said any desired location within said hot online heat
 2 exchange device comprises a furnace region of said hot online heat exchange device.

1 ¹⁷70. The system of claim 2, wherein said any desired location within said hot online heat
 2 exchange device comprises a region other than a furnace region of said hot online heat exchange
 3 device.

1 ¹⁸71. The system of claim 2, wherein said any desired location within said hot online heat
 2 exchange device is proximate the heat of a furnace of said hot online heat exchange device.

1 ¹⁹72. The system of claim 2, wherein said any desired location within said hot online heat

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- 2 exchange device is not proximate the heat of a furnace of said hot online heat exchange device.
- 1 ⁷³~~73~~. The method of claim ³⁹~~32~~, wherein said explosive device is substantially fixed relative to said
- 2 cooling apparatus. ⁴⁰
- 1 ⁷⁴~~74~~. The method of claim ³⁹~~33~~, wherein said explosive device is substantially fixed relative to said
- 2 cooling apparatus. ³⁹
- 1 ⁷⁵~~75~~. The method of claim ³⁹~~32~~, wherein said any desired location within said hot online heat
- 2 exchange device comprises a furnace region of said hot online heat exchange device.
- 1 ⁷⁶~~76~~. The method of claim ³⁹~~32~~, wherein said any desired location within said hot online heat
- 2 exchange device comprises a region other than a furnace region of said hot online heat exchange
- 3 device.
- 1 ⁷⁷~~77~~. The method of claim ³⁹~~32~~, wherein said any desired location within said hot online heat
- 2 exchange device is proximate the heat of a furnace of said hot online heat exchange device.
- 1 ⁷⁸~~78~~. The method of claim ³⁹~~32~~, wherein said any desired location within said hot online heat
- 2 exchange device is not proximate the heat of a furnace of said hot online heat exchange device.
- 1 ⁷⁹~~79~~. The method of claim ⁴⁰~~33~~, wherein said any desired location within said hot online heat
- 2 exchange device comprises a furnace region of said hot online heat exchange device.
- 1 ⁸⁰~~80~~. The method of claim ⁴⁰~~33~~, wherein said any desired location within said hot online heat
- 2 exchange device comprises a region other than a furnace region of said hot online heat exchange
- 3 device.
- 1 ⁸¹~~81~~. The method of claim ⁴⁰~~33~~, wherein said any desired location within said hot online heat
- 2 exchange device is proximate the heat of a furnace of said hot online heat exchange device.
- 1 ⁸²~~82~~. The method of claim ⁴⁰~~33~~, wherein said any desired location within said hot online heat
- 2 exchange device is not proximate the heat of a furnace of said hot online heat exchange device.